



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/586,332

07/14/2006

Hideaki Yaguchi

128755

1835

25944

7590

07/18/2008

OLIFF & BERRIDGE, PLC

P.O. BOX 320850

ALEXANDRIA, VA 22320-4850

EXAMINER

RO, BENTSU

ART UNIT

PAPER NUMBER

2837

MAIL DATE

DELIVERY MODE

07/18/2008

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/586,332	YAGUCHI, HIDEAKI	
	<b>Examiner</b>	<b>Art Unit</b>	
	/BENTSU RO/	2837	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-25 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-4, 8, 17 and 18 is/are rejected.
- 7) ☒ Claim(s) 5-7, 9-16 and 19-25 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |                                                                                        |                                                                   |
|----------------------------------------------------------------------------------------|-------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. ____.                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>2006-07-14&amp;2007-11-02</u> .                               | 6) <input type="checkbox"/> Other: ____.                          |

**FIRST OFFICE ACTION    -----    A NONFINAL REJECTION**

1.        The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2.        Claims 1-4, 8, 17, 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakamura et al US Pub No. 2004/0145338.

Claim 1 reads onto Nakamura et al teaching as follows:

Claim 1: (Currently Amended)	Nakamura et al teaching:
A motor drive apparatus comprising:	Fig. 19 prior art teaches a motor drive apparatus;
a first drive circuit driving a first motor; and	Fig. 19 shows an inverter 330 which is a first drive circuit; Fig. 19 further shows a motor M1 which is a first motor;
a voltage converter performing a voltage conversion	Fig. 19 shows a bi-directional converter 310 which is a voltage converter for performing a voltage conversion;
between a power supply and said first drive circuit, wherein	Fig. 19 shows a dc power source B which is a power supply (or a battery B); the bi-directional converter 310 is connected between the dc power source B and the inverter 330 as clearly shown in Fig. 19;
under the condition that electric power that is output from said power supply and that undergoes the voltage conversion by said voltage converter is provided to and from	this limitation reads onto two parts of operation; the first part of operation is that the dc

<p>between said first drive circuit and said first motor for driving said first motor</p> <p>and the condition that said first motor is started to be driven, said first drive circuit starts to drive said first motor</p> <p>at a timing different from a timing</p> <p>at which said voltage converter starts the voltage conversion.</p>	<p>power source B provides power to the converter 310, the converter 310 steps up the voltage of the dc power source B; the stepped up voltage is used by the inverter 330 to drive the first motor M1; this operation is referred to as a motor "driving mode";</p> <p>the second part of operation is that when the motor M1 undergoes a regenerative braking, the back emf generated by the motor M1 is fed back to the battery B via the inverter 330 and the converter 310; this operation is referred to as a motor "regenerative mode";</p> <p>the Fig. 19 circuit performs both the motor driving mode and the motor regenerative mode;</p> <p>the inverter 330 drives the first motor M1;</p> <p>see <b><u>Explanation</u></b> below:</p> <p>the starting of the bi-directional converter 310.</p>
----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

**Explanation:**

The examiner would like to explain the different start timing between the converter 310 and the inverter 330 in a logistic manner. Because there are two control elements (the converter 310 and the inverter 330), there will be four possible logic states.

**TRUTH TABLE AT THE INSTANT OF STARTING**

<u>STATE</u>	<u>Converter 310</u>	<u>Inverter 330</u>
0	0	0
1	1	0
2	0	1
3	1	1

The state "0" represents both the converter 310 and the inverter 330 are OFF.

No timing consideration for this state.

The states "1" and "2" must have a different timing because one of the converter 310 and the inverter 330 is OFF and the other one is ON at the very beginning of the initializing process. It is noted that the OFF device will be turned ON subsequent to the very beginning of the initializing process. Thus, one can use either state "1" or state "2" initialization scheme to control the converter 310 and the inverter 330 to achieve a different timing as claimed.

When switching to state "3", both converter 310 and inverter 330 are ON simultaneously. However, the ON timings of the converter 310 and the ON timing of the inverter 330 are different because there is a mega capacitor 322 connected in parallel with the inverter 330.

When switching ON a parallel circuit, the current goes into the capacitor 322 first to charge the capacitor 322. At the instant of time ON, the capacitor 322 voltage is zero and gradually rises to a voltage equivalent to the power supply voltage B. The time for this charging depends on the capacitance value of the capacitor 322 and the resistance

Art Unit: 2837

value of the circuit (such as internal resistance of the battery B). The inverter 330 starts to function ONLY at the time when the voltage of the capacitor rises to a specific value. Thus, there is a time difference between the ON time of the converter 310 and the ON time of the inverter 330. This time difference is about five time constant of the capacitor's RC time constant.

It is noted that claim 1 is claiming no more than a time difference of a start time between the inverter 330 and the converter 310. Because the existence of mega capacitor 322, there is ALWAYS an ON-time difference between the converter 310 and the inverter 330. Therefore, the claimed limitation is met by all conditions of the logic states "1", "2" and "3".

If applicant amend claim 1 by adding the limitation set forth in the specification page 13, lines 7-11, recited as

The output timing is adjusted as follows. Signal PWMC is firstly output to voltage step-up converter 12 to control voltage step-up converter 12 so that the converter steps up DC voltage  $V_b$  and, after voltage step-up converter 12 completes the voltage step-up operation, signals PWMI 1, PWMI2 are output respectively to inverters 14, 31.

The examiner will still reject the claim 1 because this limitation is considered obvious in a sequential control as explained below.

**A sequential control:**

There are many electrical or mechanical systems that require a sequential control. Speak differently, the operation or the manufacturing of the system must follow a specific sequence, or otherwise, the system simply won't function properly or may fail. For example, if a sequential system has two steps A and B, and the step B can be started only after the completion of step A. Such a sequential control is well known art.

Examples:

- To run a program in a computer, one must install the program into the computer in order to run the program. Thus, program installation is a step A and run the program is a step B. Reversing steps A and B simply won't work.
- In a laboratory experiment, one must run the equipment and then collect the data. Thus, running the equipment is a step A and collecting the data is a step B.
- In operating a camera, one must install film and then take the picture. Thus, installing the film is a step A and taking a picture is a step B.
- In running a vehicle, the engine must be started first, and then gear shifts to driving position "D". Reversing the step, the vehicle simply won't run.
- You cannot go into house until the door is opened. Thus, opening the door is a step A and going into the house is a step B.
- You cannot open the door until the door is unlocked.
- You cannot drink a bottle water until the bottle cap is removed.
- You cannot play CD player until the CD disk is inside the player.
- You cannot iron the cloth until the iron is hot.
- You cannot build the house until the foundation is made.

Art Unit: 2837

- You put on the shoe and then tie the shoelace.
- You boil water and then prepare the tea.
- You put water in an ice tray before making an ice cube.
- A company manufacturing the components before assembling the components into a product.

The list goes on and on.....

The limitation of claim 1,

said first drive circuit starts to drive said first motor at a timing different from a timing at which said voltage converter starts the voltage conversion.

and the limitation of specification page 13, lines 7-11,

The output timing is adjusted as follows. Signal PWMC is firstly output to voltage step-up converter 12 to control voltage step-up converter 12 so that the converter steps up DC voltage  $V_b$  and, after voltage step-up converter 12 completes the voltage step-up operation, signals PWMI 1, PWMI2 are output respectively to inverters 14, 31.

are no more than a common sense of initializing a system that requires a sequential control. Therefore, such a limitation should be rejected.

Claims 2-4 are claiming nothing more than a motor driving mode of operation and is met by Nakamura et al teaching.

Claims 17 and 18 are claiming nothing more than a motor regenerative mode of operation and is met by Nakamura et al teaching.



Regarding claim 8, albeit not shown, any motor can be used as an engine start motor, including the motor M1 of Nakamura et al teaching.

3. Claims 5-7, 9-16, 19-25 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

4. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

5. Any inquiry concerning this communication should be directed to /BENTSU RO/ at telephone number (571)272-2072.

/BENTSU RO/  
Primary Examiner  
Art Unit 2837